A12. APPENDIX 12

PROCEDURES FOR DETERMINING AMBIENT AIR CONCENTRATIONS FOR HAZARDOUS AIR POLLUTANTS

A12.1. The procedure described in this section shall be used to develop chronic ambient air concentrations (CAACs) and acute ambient air concentrations (AAACs) for hazardous air pollutants (HAPs) for the following:

A12.1.1. Any HAP not included in Article 17, Table 3; and

A12.1.2. Any compound included in a group of HAPs listed in Article 17, Table 3, other than those identified in the group listing as the "selected" compound.

A12.2. Chronic Ambient Air Concentrations

A12.2.1. The following data sources shall be reviewed and, except as otherwise provided, shall be given the priority indicated in the development of CAACs:

A12.2.1.1. Tier 1 Data Sources: Reference Concentrations (RfCs) and air Unit Risk Factors (URFs) as presented in the Integrated Risk Information System (IRIS) of the United States Environmental Protection Agency (EPA).

A12.2.1.2. Tier 2 Data Sources:

A12.2.1.2.1. Preliminary Remediation Goals (PRGs) developed by Region 9 of EPA.

A12.2.1.2.2. Risk-Based Concentrations (RBCs) developed by Region 3 of EPA.

A12.2.1.3. Tier 3 Data Sources:

A12.2.1.3.1. Minimal Risk Levels (MRLs) developed by the Agency for Toxic Substances and Disease Registry (ATSDR).

A12.2.1.3.2. Reference Exposure Levels (RELs) and Unit Risk Factors (CalURFs) developed by the California Environmental Protection Agency.

A12.2.2. Evaluation of Tier 1 Values

A12.2.2.1. Calculation of Concentrations

A12.2.2.1.1. RfCs shall be multiplied by 1.04 to reflect an assumed exposure of 350, rather than 365, days per year.

A12.2.2.1.2. URFs shall be transformed into concentrations in milligrams per cubic meter (mg/m^3) by applying the following equation:

TR x ATc/(EF x IFA adj x [URF x BW/IR])

where: TR = 1E-06, ATc = 25,550 days, EF = 350 days/year,

IFA adj = 11 m^3-year/kg-day, BW = 70 kg, IR = 20 m^3/day

A12.2.2.2. Comparison to Tier 2 and Tier 3 Concentrations

The concentration developed in accordance with section A12.2.2.1 above shall be compared to the Tier 2 and Tier 3 concentrations for the compound, if any. URF-based concentrations shall be compared only to concentrations based on CalURFs. RfC-based concentrations shall be compared to concentrations based on PRGs, RBCs, MRLs and RELs.

A12.2.2.2.1. If there is reasonable agreement between the Tier 1 concentration and the other concentrations for the compound, the Tier 1 concentration shall be selected as the CAAC.

A12.2.2.2.2. If the Tier 1 concentration is not in reasonable agreement with the other concentrations, and one of the other concentrations is based on more recent or relevant studies, that concentration shall be selected as the CAAC. Otherwise the Tier 1 concentration shall be selected.

A12.2.2.3. If both an RfC-based and URF-based Tier 1 concentration is selected under section A12.2.2.2 above, the more stringent of the two shall be used as the CAAC.

A12.2.2.4. If a Tier 1 value is selected in accordance with this section, no further evaluation of Tier 2 or Tier 3 concentrations is required.

A12.2.3. Evaluation of Tier 2 Concentrations

A12.2.3.1. Selection of Tier 2 Values for Further Evaluation

A12.2.3.1.1. If there is only a PRG or RBC for the compound, it shall be selected for further evaluation in accordance with section A12.2.3.2 below.

A12.2.3.1.2. If there is both a PRG and an RBC for the compound, the concentrations shall be compared. If the concentrations are similar, the PRG shall be selected for further evaluation. If the concentrations are not similar, and the RBC is based on more relevant or more recent studies, it shall be selected for further evaluation. Otherwise the PRG shall be selected.

A12.2.3.2. Comparison to Tier 3 Concentrations

The concentration developed in accordance with section A12.2.3.1 above shall be compared to the Tier 3 concentrations for the compound, if any. For purposes of this comparison, only MRL- or REL-based concentrations shall be considered.

A12.2.3.2.1. If there is reasonable agreement between the Tier 2 concentration and the Tier 3 concentrations for the compound, the Tier 2 concentration shall be selected as the CAAC.

A12.2.3.2.2. If the Tier 2 concentration is not in reasonable agreement with the Tier 3 concentrations, and one of the Tier 3 concentrations is based on more recent or relevant studies, that concentration shall be selected as the CAAC. Otherwise the Tier 2 concentration shall be selected.

A12.2.3.3. If a Tier 2 concentration is selected in accordance with section A12.2.3, no further evaluation of Tier 3 concentrations is required.

A12.2.4. Evaluation of Tier 3 Values

A12.2.4.1. Calculation of Concentrations

A12.2.4.1.1. MRLs and RELs shall be multiplied by 1.04 to reflect an assumed exposure of 350, rather than 365, days per year.

A12.2.4.1.2. CalURFs shall be transformed into concentrations in milligrams per cubic meter (mg/m^3) by applying the following equation:

TR x ATc/(EF x IFA adj x [CalURF x BW/IR])

where: TR = 1E-06, ATc = 25,550 days, EF = 350 days/year,

IFA adj = 11 m^3-year/kg-day, BW = 70 kg, IR = 20 m^3/day

A12.2.4.2. Selection of Concentration

A12.2.4.2.1. If both an MRL and an REL exist for the compound, the most appropriate shall be selected after considering the relevance and timing of the studies on which the levels are based.

A12.2.4.2.2. If there is both a CalURF-based concentration and a concentration based on an MRL or REL for the compound, the more stringent of the two shall be selected.

A12.2.5. No Available Data

If there is no data available in any of the sources identified in section A12.2.1 for the compound, the applicant must perform a Tier 4 Risk Management Analysis under R18-2-1708 or forego the Risk Management Analysis option.

A12.3. Acute Ambient Air Concentrations

A12.3.1. Selection of Concentration

The first concentration identified by evaluating the following data sources in the order listed shall be adjusted, where required, and used as the AAAC for the compound:

A12.3.1.1. The four-hour average level 2 Acute Exposure Guideline Level developed by the EPA Office of Prevention, Pesticides and Toxic Substances.

A12.3.1.2. The one-hour average level 2 Emergency Response Planning Guideline (ERPG) developed by the American Industrial Hygiene Association. The AAAC shall be the ERPG divided by 2.

A12.3.1.3. The one-hour average level 2 Temporary Emergency Exposure Limit (TEEL) developed by the United States Department of Energy's Emergency Management Advisory Committee's Subcommittee on Consequence Assessment and Protective Action. The AAAC shall be the TEEL divided by 2.

A12.3.2. No Available Data

If there is no data available in any of the sources identified in section A12.3.1, the applicant must perform a Tier 4 Risk Management Analysis under R18-2-1708 or forego the Risk Management Analysis option.